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REAL ESTATE ECONOMISTS, APPRAISERS AND COUNSELORS

CONSTRUCTION COST OF A FRAME RANCH HOUSE

THE one-story frame house is undoubtedly the most popular house in the country, and has been for a long time. If there is any such thing as a basic house, it is probably a one-story frame. In the last 15 years, and particularly since the end of the war, the architectural and construction techniques applied to frame residences have brought forth widely varied results.

Probably the result that has pleased the greatest number of home buyers in the postwar period is the basementless house with the open floor plan and sweeping roof line. Dry wall construction is another characteristic frequently found in this type of house. More often than not, these houses are built as semi-prefabs and in numbers sufficient to allow the application of other mass production techniques. One very widely publicized house of this type is the Home Builders' "Trade Secrets Home," recently featured in LIFE and HOUSE AND HOME Magazines.

The house discussed in this bulletin is usually built in volume and as a semi-prefab. It was designed by Ralph Fournier of Modular Homes, Inc., and Burton W. Duenke of the Burton W. Duenke Building Company. Most of these houses have been erected by Duenke. A good portion of the house is prefabricated by Modular Homes, Inc., which delivers the "packaged" houses to Duenke for erection in one of his several subdivisions. This house was chosen as a Five-Star Home by BETTER HOMES AND GARDENS, and its pictures and floor plans appeared in a recent article in that magazine. It will also be featured in the February 1953 issue of HOUSE AND HOME

While most of these houses are built as semi-prefabs, the detailed costs discussed in this bulletin are for conventional construction. A sketch is shown on the following page, and the floor plans appear on page 63. This house can be built conventionally in the St. Louis area for about $12,200. The carport will cost another $600. It can be semi-prefabbed in volume for about 10% less.

The costs shown in this bulletin by no means represent the usual selling price of this type house. There are numerous items usually included by the builder in his package that we have omitted. We have done this for two reasons:

1. In order to make the construction costs of this house comparable with the costs of other Wenzlick Standard Houses, we have omitted such items as stoves, refrigerators, washers and other appliances. Neither do we include such items as Venetian blinds and lighting fixtures. These items are, for the most part, not really items of construction cost, and have never been included in the costs of the other Wenzlick Standard Houses.

2. There are many items that vary widely in cost, not only from one part of the country to another, but within the same area. Moreover, some of these items can hardly be considered as items of construction cost of the house. In this class are the lot, landscaping, grading, planting, sodding, walks, drives, curbs, sewers, streets and other subdivision costs, surveys, architect's fees and sales commissions. We have, therefore, omitted from our estimate these items that vary widely in cost, or which are not strictly construction cost items.

By omitting these items, we make the figures more comparable with the other Wenzlick Standard Houses, and with similar houses in different parts of the country.

Modular Homes, Inc., of St. Louis County, has furnished us with the plans and specifications of the house. Since our cost estimates are based on conventional construction, we have altered the specifications (slightly) to meet the requirements of a conventional builder.

FRAME RANCH HOUSE
Content: 12,285 cubic feet
1,170 square feet

DESCRIPTIVE SPECIFICATIONS

EXCAVATION Excavation for foundation wall and grade beam should be to a minimum of 30". Where excavation does not reach virgin clay, piers 6' 4" on center should be dug to solid ground (no piers included in cost figures).

FOUNDATION WALLS

Foundation walls shall be installed to dimensions indicated on the plans. The mixture shall be one (1) part Portland Cement, two (2) parts clean sharp sand, four (4) parts broken stone, trap-rock, gravel or other suitable clean coarse aggregate, graded in size to pass through a 2" screen. The foundation may be done in two pours, the first up to grade level, and the second to complete the wall as shown in the drawings. The two pours should be tied together with 5/8" rods, as necessary. Bolts to hold plates should be $\frac{1}{2}$" x 10", and set about 6" on center. Plates should be set in asphalt plastic cement to provide a weather seal and termite protection. Grade beam should be poured as shown on drawings.

FLOOR SLAB

The floor slab is 4" concrete 1-2-4 mixture with a trowel finish and with 6 x 6 x 10 reinforcing mesh. The fill under the slab is 6" of gravel, and the under-slab waterproofing is Sisalkraft. Two-inch glass insulation bats, 30" long, are laid beneath perimeter of the floor slab as shown on drawings.

Furnace chimney base is precast perlite and flue is 8" round terra cotta. It is held in place by reinforcing rods which go through the rafters.

FIREPLACE

The fireplace is built of stone and lined with firebrick. The chimney is built of concrete block and faced with stone veneer. The chimney flue liner is to be 10" terra cotta. A 30" steel damper is to be installed.

ROUGH CARPENTRY AND FRAMING MATERIAL

Rough carpentry and framing material shall be the best grade provided in local practice (may be yellow pine, white pine, fir or hemlock). All material shall be of sizes indicated, with allowance for milling.

Studding in exterior walls and interior partitions	2" x 4" - spaced 16" c to c
Roof rafters	2" x 8" - spaced 16" c to c
Joists	2" x 8" - spaced 16" c to c

The entire structure shall be braced and trussed where necessary, and securely nailed as required by best practice.

SHEATHING

Sheathing on roof and exterior walls shall be No. 2, yellow pine or fir or equal, dressed 6" to 8" wide. It shall be laid diagonally on the exterior walls, and each intersection well nailed by two 6d nails.

EXTERIOR SIDING

Exterior siding is V-joint redwood 7/8" thick and from 8" to 12" wide. Siding is nailed with an extra long tongue to assure tight joints.

ROOFING

Roof has a pitch of 2" in 12". Redwood is used on all overhanging areas, and yellow pine, fir, white pine or hemlock is used on the remainder of the roof. Built-up asphalt and gravel roof consists of one 30-pound and two 15-pound felts, solid mopped to each other and spot mopped to the roof deck. After the final mopping, the entire surface is covered with roofing stone or gravel. The flashing material is to be 26-gauge galvanized iron.

GUTTERS AND DOWNSPOUTS

Gutters are built in as part of the roof, as shown in the plans. Spouting headers and downspouts are 3" x 4" rectangular shaped, and are to be made from 26-gauge galvanized iron.

DOORS, WINDOWS AND MILLWORK

Interior doors are to be slab-type, 1-3/8" thick, with a birch finish. The main entrance door is to be slab-type, 1-3/4" thick, with a birch finish. The rear entrance door is single panel, of 1-3/4" white ponderosa pine. All door jambs and door frames are redwood. Trim is to be box-type, $\frac{1}{2}$" x 2" striated redwood. Window frames are redwood, and the sliding windows are aluminum. Windows are set in calking. The small fixed glass windows are to be double-strength, and the large fixed glass windows are crystal sheet. Window trim is also box-type, $\frac{1}{2}$" x 2" striated redwood. Full screens are to be provided for the aluminum sliding windows. All exterior millwork is redwood.

FINISHED FLOORS

Finished floors are 1/8" asphalt tile in all rooms.

BUILT-IN CABINETS

Kitchen cabinets are of natural finish birch. There are to be 30 lineal feet of shelves, 13" wide. Counter top of kitchen cabinets is formica, and there is to be an 18" formica back splash. The medicine cabinet is to be made of steel, with a plate glass mirror, and shelves are to be installed in the linen closet. Book shelves and telephone cabinet are mill made. The storage wall closets are equipped with sliding doors.

TILE WORK

Ceramic tile (4-1/4" x 4-1/4") wainscoting is to be provided in the bathroom. The tile is to be set in mastic to a height of 45$\frac{1}{2}$" except above the tub. The height above the tub is to be 60".

INTERIOR WALLS AND CEILINGS

Interior walls and ceilings are to be covered with dry wall material $\frac{1}{2}$" thick. The joints are to be given the standard three-coat cement and tape treatment, and thoroughly sanded.

PAINTING

Immediately upon completion of all exterior and interior woodwork, and exterior siding, the painter shall apply priming coat consisting of white lead, pure linseed oil and turpentine, blended in proportions considered best in local practice. Upon completion of the priming coat, all nail holes and other imperfections in the wood shall be stopped and filled with white lead putty. Second and third coats shall also consist of white lead, pure linseed oil and turpentine, and may be mixed and applied in the color selected. Interior walls and ceilings are to be given one coat of a sand-finish rubber-base paint, the colors to be selected by the owner.

PLUMBING

This specification contemplates a complete plumbing, drainage and water-supply system for one bathroom and one kitchen, and lead-in and drainage lines for the installation of a water heater and washing machine.

Sewer Line, Vents and Drainage. House sewer line of 4" shall be carried to a point 50' beyond foundation walls. Septic tank, drainage field, a connection to public sewer or municipal permits as may be required by local custom are not included. Vent and drainage system shall be installed and tested in accordance with best local practice, municipal code, or requirements of American Society of Sanitary Engineers. All joints shall be filled with oakum and poured lead and well calked. Two-inch vent and waste lines shall be continued beyond the foundation walls for 50' and the joints securely set with cement mortar. Plumber shall excavate and backfill all pipe trenches.

Water Supply. A pipe shall be continued 50' beyond the foundation walls in separate trench. This shall be laid using 3/4" copper water tubing with sweat-joint fittings. One-half inch copper tubing with sweat-joint pipe and fitting shall be installed for hot and cold water supply and connected with all plumbing fixtures. All pipe and fitting shall be installed in accordance with manufacturer's instructions.

Fixtures. There shall be furnished and installed to the rough connections here provided fixtures of quality equal to those specified in the following list:

1 single bowl kitchen sink set in formica top
1 lavatory with formica top and metal base cabinet for the bath
1 vitreous china water closet
1 bathtub equipped with shower and standard rod

Hot Water Supply. A domestic heater is not provided under these specifications. It will be provided under separate order on selection by the owner, and cost of connecting and placing the device in operation shall be included under this original plumbing contract.

Alternates. If local building codes and practice do not permit the use of copper tubing and sweat-joint fittings for water supply, the contractor shall furnish genuine wrought-iron galvanized pipe in place thereof. However, where substitution is made, pipe one size larger than specified shall be provided.

HEATING PLANT

The contractor shall guarantee the heating plant to heat the entire house to 70° Fahrenheit when the outside temperature is at zero, and the wind velocity is not in excess of 30 miles an hour, with not less than a 6-hour firing period. It is recommended that a furnace with 90,000 B.T.U. input be installed, and that it shall be a forced warm air furnace manufactured by the American Furnace Company or equal. Heating ducts are to be 26-gauge galvanized iron.

ELECTRICAL SYSTEM

110-volt and 220-volt lines shall be run to the house. There are to be four 110-volt circuits. All material shall be of standard make and of quality and installed as required by the National Board of Fire Underwriters. All outlets shall terminate in approved metal boxes, and switches shall be of toggle type. All outlets other than for lighting fixtures and switches shall be equipped with standard duplex connections. Wiring to outlets shall be of approved size BX or Romex cable of sufficient size to carry the circuit load. Each of the four circuits shall be switched and fused and extended to a central panel board, and shall terminate at an appropriate meter and fuse box. Connection from meter panel to public service lines is not included in this contract, nor are electrical fixtures and appliances provided.

INSULATION

4" of loose insulating material, rock wool or equal, shall cover the entire area of the ceiling. All exterior walls shall be insulated with 4" bats, rock wool or equal.

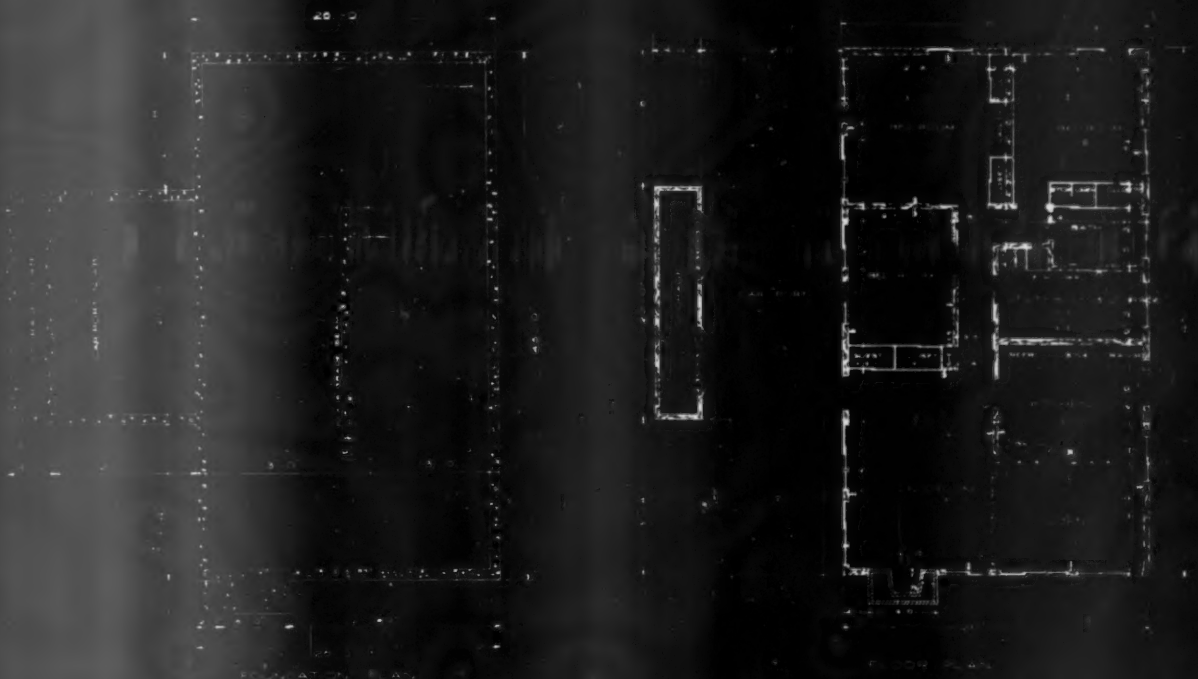
CARPORT

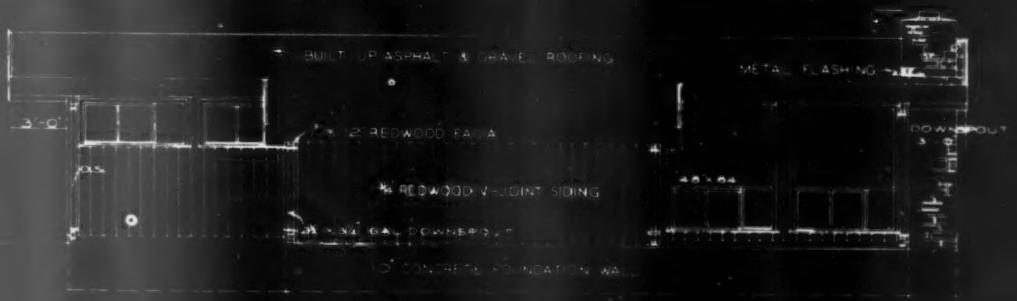
Carport framing shall be similar to that of the house. The storage space is to be unfinished inside, but is equipped with four batten doors.

COST INFORMATION

The cost of building this house conventionally in February 1953 in the St. Louis area is $12,206. Since it has an area of 1,170 square feet and a volume of 12,285 cubic feet, the present cost amounts to $10.43 per square foot, or $1.00 (actually 99.4¢) per cubic foot. The cost of the carport with concrete slab floor is $580. As we have pointed out before, this house can be volume-built as a semi-prefab for about 10% less.

Some of our readers are undoubtedly interested in estimating the difference in cost between plastered walls and dry wall construction. Plastered walls and





FRONT ELEVATION

SIDE ELEVATION

ceilings in this house would run its cost to $12,654, or $448 more than the cost when built with dry wall. We have figured our plastered walls and ceilings with a tinted finish coat to eliminate the necessity of painting them. Painting the plastered walls and ceilings with a rubber-base sand-finish paint would add another $100 to their cost, and the difference would then be $548.

Our personal preference has always swung toward houses with basements. We can't get away from the feeling that they are better houses and that they will hold their value for a longer time. (This does not apply to those areas where local custom or soil conditions make basements extremely rare.) The advantages of the extra space need not be entered into here, but you can get a lot of additional space for a relatively small amount of money.

Building this house with a basement increases its cost $1,900. This runs the total cost of the house with basement to $14,106. Naturally, its square foot cost is higher ($12.06), but its cubic cost is a good deal lower. The volume of the house and basement, which is 22,520 cubic feet, gives a cubic cost of 63¢.

A summary of these various costs is shown in the table below.

	Total cost Feb. 1953 St. Louis area	Area (sq. ft.)	Volume (cu. ft.)	Cost per sq. ft.	Cost per cu. ft.
Conventionally built					
No basement, dry wall construction	$12,206	1,170	12,285	$10.43	$0.994
No basement, plastered walls	12,654	1,170	12,285	10.82	1.03
Full basement, dry wall construction	14,106	1,170	22,520	12.06	0.63
Full basement, plastered walls	14,554	1,170	22,520	12.44	0.65
Cost of carport	580				
Volume built					
No basement, dry wall, semi-prefab	11,000	1,170	12,285	9.40	0.895

In an early bulletin we will discuss the method of estimating the cost of this type house when it is built in different sizes and shapes.

SUPPLEMENTAL COST DATA FOR THE WENZLICK STANDARD BUILDINGS

Bringing Cost Tables Up To Date as of Feb. 1953

			Material	Labor	Overhead	TOTAL	Cu. ft. cost	Sq. ft. cost
SIX-ROOM FRAME HOUSE	Ja	1952	$ 7,763	$ 4,990	$ 3,212	$ 15,965	65.7¢	$ 9.68
	F	1952	7,737	4,990	3,207	15,934	65.6	9.66
	Mr	1952	7,712	4,987	3,196	15,895	65.4	9.63
	Ap	1952	7,702	5,065	3,238	16,005	65.9	9.70
	My	1952	7,696	5,059	3,231	15,986	65.8	9.69
	Je	1952	7,605	5,056	3,215	15,876	65.4	9.62
	Jl	1952	7,582	5,056	3,212	15,850	65.3	9.61
	Ag	1952	7,581	5,056	3,213	15,850	65.3	9.61
	S	1952	7,565	5,062	3,210	15,837	65.2	9.60
	O	1952	7,576	5,105	3,233	15,914	65.5	9.64
	N	1952	7,576	5,105	3,233	15,914	65.5	9.64
	D	1952	7,576	5,105	3,233	15,914	65.5	9.64
	Ja	1953	7,645	5,187	3,300	16,132	66.4	9.78
	F	1953	7,694	5,187	3,314	16,195	66.7	9.82
FIVE-ROOM BRICK HOUSE	Ja	1952	6,625	5,074	2,835	14,534	58.3	12.48
	F	1952	6,604	5,074	2,835	14,513	58.3	12.46
	Mr	1952	6,577	5,071	2,827	14,475	58.1	12.42
	Ap	1952	6,603	5,083	2,837	14,523	58.3	12.47
	My	1952	6,598	5,081	2,833	14,512	58.3	12.46
	Je	1952	6,511	5,078	2,818	14,407	57.8	12.37
	Jl	1952	6,515	5,078	2,820	14,413	57.9	12.37
	Ag	1952	6,522	5,078	2,823	14,423	57.9	12.38
	S	1952	6,515	5,085	2,820	14,420	57.9	12.38
	O	1952	6,510	5,103	2,827	14,440	58.0	12.39
	N	1952	6,510	5,103	2,827	14,440	58.0	12.39
	D	1952	6,510	5,103	2,827	14,440	58.0	12.39
	Ja	1953	6,560	5,164	2,879	14,603	58.6	12.53
	F	1953	6,580	5,164	2,880	14,624	58.7	12.55
SIX-ROOM BRICK HOUSE*	Ja	1952	7,348	6,283	3,299	16,930	73.3	11.14
	Ap	1952	7,280	6,314	3,303	16,897	73.1	11.12
	Jl	1952	7,208	6,314	3,286	16,808	72.8	11.06
	O	1952	7,205	6,335	3,296	16,836	72.9	11.08
	Ja	1953	7,205	6,359	3,331	16,895	73.1	11.12
CALIFORNIA BUNGALOW	Ja	1952	4,075	3,014	1,963	9,052	74.7	9.12
	F	1952	4,062	3,014	1,959	9,035	74.6	9.11
	Mr	1952	4,046	3,013	1,950	9,009	74.3	9.08
	Ap	1952	4,073	3,035	1,965	9,073	74.9	9.15
	My	1952	4,071	3,034	1,965	9,070	74.8	9.14
	Je	1952	4,003	3,033	1,955	8,991	74.2	9.06
	Jl	1952	4,001	3,033	1,955	8,989	74.2	9.06
	Ag	1952	4,004	3,033	1,958	8,995	74.2	9.07
	S	1952	3,995	3,039	1,959	8,993	74.2	9.07
	O	1952	3,992	3,068	1,969	9,029	74.5	9.10
	N	1952	3,992	3,068	1,969	9,029	74.5	9.10
	D	1952	3,992	3,068	1,969	9,029	74.5	9.10
	Ja	1953	4,017	3,107	1,982	9,106	75.1	9.18
	F	1953	4,066	3,107	1,989	9,162	75.6	9.24
18-FAMILY APARTMENT*	Ja	1952	80,149	56,223	24,128	160,500	95.3	12.10
	Ap	1952	79,264	56,457	24,057	159,778	94.9	12.05
	Jl	1952	78,818	56,457	23,997	159,272	94.6	12.01
	O	1952	78,756	56,615	24,022	159,393	94.7	12.02
	Ja	1953	78,756	57,148	24,131	160,035	95.0	12.07
30-FAMILY APARTMENT*	Ja	1952	177,543	113,074	50,382	340,999	112.3	15.96
	Ap	1952	176,241	113,930	50,381	340,552	112.2	15.93
	Jl	1952	177,723	113,930	50,581	342,234	112.7	16.01
	O	1952	177,724	114,510	50,700	342,934	113.0	16.05
	Ja	1953	177,724	115,574	50,921	344,219	113.4	16.11
COMMERCIAL BUILDING*	Ja	1952	19,477	17,296	14,088	50,861	43.9	6.30
	Ap	1952	19,523	17,334	14,120	50,977	44.0	6.31
	Jl	1952	19,361	17,325	14,059	50,745	43.8	6.28
	O	1952	19,421	17,392	14,120	50,933	44.0	6.31
	Ja	1953	19,514	17,619	14,251	51,384	44.4	6.36

*Computed on a quarterly basis.